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CENTER FOR HEALTH SERVICES RESEARCH AND DEVELOPMENT

SCHOOL OF PUBLIC HEALTH

Garo Meghriyan Institute for Preventive Ophthalmology

2015 Annual Report



Prevent Avoidable Blindness

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Executive Summary

In 1999, Mr. Garo Meghriqian of Los Angeles funded a Blindness Prevention Program in Armenia in memory of his daughter, Christine Hripsime. With a generous gift from the Meghriqian family, the Garo Meghriqian Institute for Preventive Ophthalmology (Meghriqian Institute) was established within the Center for Health Services Research and Development (CHSR) at AUA's School of Public Health. Meghriqian Institute's mission is to prevent avoidable blindness in Armenia.

This Annual Report highlights the main activities and accomplishments of the Meghriqian Institute in 2015.

In February 2015, Meghriqian Institute completed data collection for the project "Visual impairment and vision - related quality of life among patients with cataract surgery in Sevan Regional Ophthalmic Unit (ROU), Gegharkunik marz".

In May 2015, Meghriqian Institute launched an eye screening program for World War II veterans living in Yerevan to mark the 70th anniversary of the victory. Thirty-seven veterans participated in detailed eye screenings. Thirty-three veterans received free eye glasses from the Meghriqian Institute. Those with eye diseases received free ophthalmic consultation and medical treatment prescription from the Meghriqian Institute.

In July, 2015, Meghriqian Institute completed a project aimed at reducing the incidence of avoidable blindness and visual impairment among socio-economically disadvantaged population in Martuni province of Artsakh. Meghriqian Institute implemented free eye screenings among 280 people living in Martuni and distributed 257 free eye glasses to those in need. As part of the project in Artsakh, the Meghriqian Institute donated medical equipments to regional hospitals in Kashatagh, Hadrut, and Martuni.

On October 8, 2015, Meghriqian Institute celebrated World Sight Day (WSD) by organizing free eye screenings for children living at the Gavar Children's Home orphanage. Fifty five children participated in detailed eye screenings. Ten children with refractive errors received free

eyeglasses from the Meghriyan Institute. Sixteen children with different eye pathologies received free ophthalmic consultation and treatment from the Meghriyan Institute.

In May 2015, Meri Mkhitarian, the Meghriyan Public Health Ophthalmology Fellow, defended her MPH thesis which was a research grant proposal on the topic of “Assessment of self-reported prevalence and risk factors of Dry Eye Disease among visual display terminal users at workplaces in Armenia”. Meghriyan Institute supervised and supported Meri’s proposal. The actual study will be completed by the Meghriyan Fellow in 2016.

Garo Meghriyan Institute for Preventive Ophthalmology published a paper on “The prevalence of and major risk factors associated with diabetic retinopathy in Gegharkunik province of Armenia: a cross-sectional study” in the peer-reviewed journal “BMC Ophthalmology”.

The research team of the Meghriyan Institute worked on papers “Visual outcome and vision related quality of life among patients after cataract surgery at Sevan Regional Ophthalmic Unit in Armenia” and “Visual impairment and vision related quality of life among adult population living in Hadrut and Martuni regions of Artsakh”. The papers will be submitted to peer-reviewed journals for publication in 2016.

The research team of the Meghriyan Institute presented the work “Risk Factors for Developing Myopia among Schoolchildren in Yerevan and Gegharkunik province” during the European Public Health Conference in October 2015 in Milan, Italy. The abstract was published in the European Journal of Public Health 2015.

The Meghriyan Institute continued its partnership with the Lions Regional Ophthalmic Unit in Sevan, established earlier through the joint efforts of the Meghriyan Institute and the Ararat Lions Club (ALC), and funded by the Lions Club International Foundation-LCIF. Since its establishment, this Unit has served around 28,094 people and performed 3,197 surgeries. Meghriyan Institute is responsible for preparing annual reports to LCIF headquarters.

Meghriqian Institute provided eye screenings to 409 patients in Armenia and Artsakh, and distributed 308 free eye glasses to the population in need in 2015.

Introduction

In 1999, Mr. Garo Meghriqian of Los Angeles funded a Blindness Prevention Program in Armenia in memory of his daughter, Christine Hripsime. With a generous gift from the Meghriqian family, the Garo Meghriqian Institute for Preventive Ophthalmology (Meghriqian Institute) was established within the Center for Health Services Research and Development (CHSR) at AUA's School of Public Health. In partnership with local experts, the Meghriqian Institute seeks to assess and characterize the burden of eye diseases in Armenia, to promote preventive measures such as screenings, to develop professional and public awareness through educational programs, and to help increase the local health system's capacity to effectively identify and prevent vision disorders before they lead to blindness.

The main objectives of the Meghriqian Institute are to:

- Conduct scientific investigations of ophthalmic epidemiology to increase understanding of eye disease in the community;
- Link ophthalmologic services with expertise in organizing, financing and delivery of services to increase the utilization of ophthalmologic care in Armenia;
- Educate eye care providers and the general public on scientific advances in detecting, preventing, and treating eye disease and in translating these advances into nationwide clinical practice;
- Establish an ophthalmic care and prevention network to expand service delivery to underserved populations in need of affordable, accessible, and high quality eye care services for prevention and treatment of blindness at all levels;
- Develop partnerships with organizations that are interested in blindness prevention and are capable of furthering the achievements of Meghriqian Institute's goal;
- Train the future professionals for blindness prevention activities in Armenia;
- Establish a regional blindness prevention network for the Caucasus, emphasizing underserved areas and minority populations.

Since 2004, the Meghrigian Institute has also been sponsoring a fellowship program to encourage Armenian ophthalmologists to combine population-based prevention activities with clinical ophthalmology, as part of the Master of Public Health program at AUA.

Vision loss, or blindness, is a major public health problem. The leading causes of chronic blindness include cataract, glaucoma, age-related macular degeneration, corneal opacities and diabetic retinopathy. Blindness decreases quality of life and has a great impact on the socio-economic development of individuals and society. The Meghrigian Institute's activities include eye screenings and treatment for socially vulnerable children and the elderly living in retirement homes and border villages; delivering educational programs to ophthalmologists, ophthalmic nurses, endocrinologists, primary health care providers, and school nurses working in rural areas of Armenia; donating ophthalmic equipment to ophthalmic offices of primary care facilities; and establishing a high quality ophthalmic services, such as the Lions Regional Ophthalmic Unit, established in Sevan, Gegharkunik province. The Meghrigian Institute founded this unit in partnership with the Ararat-1 Lions Club and with funding from the Lions Club International Foundation. It is a first step in expanding affordable, accessible, and high quality ophthalmic service delivery to underserved populations, and serves as a model regional ophthalmic system in Gegharkunik province. The Unit has served around 28,094 people and performed 3,197 surgeries for free or at a cost much lower than in Yerevan. In addition, the Meghrigian Institute has conducted eye screenings among socially disadvantaged children and adults in Armenia and Artsakh, and ophthalmic research among different population groups, including people with cataract surgery and with diabetes.

This report highlights the main activities and accomplishments of the Meghrigian Institute in 2015.

Activities and accomplishments

1. Meghriyan Institute Explores Vision Related Quality of Life

In February 2015, Meghriyan Institute completed data collection for the project “Visual impairment and vision - related quality of life among patients with cataract surgery in Sevan Regional Ophthalmic Unit (ROU), Gegharkunik marz”. The project included free eye screenings among patients who underwent cataract surgery at ROU in Sevan, Gegharkunik, and assessment of their vision outcomes and vision related quality of life after the surgery. Meghriyan Institute screened 248 patients in 2014 and 2015. The screenings were completed in Sevan, Gavar, Martuni, Vardenis, and Tchambarak towns of Gegharkunik marz, Hrazdan and Charentsavan towns of Kotayk marz, and the capital city Yerevan.

About 90.7% of study participants had good and borderline visual outcome after cataract surgery, and 9.3% had poor visual outcome, respectively. The mean global score of Vision Function Questionnaire -25 (VFQ-25), which measures vision related quality of life, was 67.6 ± 22.49 (SD). Being female, having low socio-economic status, having at least one non-communicable disease, frequent use of eye care services, smoking status, current visual outcome after cataract surgery and having other eye disorders were significantly associated with VFQ-25 global score in the adjusted linear regression model.



2. Meghriyan Institute Provides Eye Services to World War II Veterans

In May 2015, Meghriyan Institute launched an eye screening program for World War II veterans living in Yerevan to mark the 70th anniversary of the victory. The staff of the Meghriyan Institute worked with the Armenian Veterans' Association, which currently serves around 400 veterans. Thirty-seven veterans participated in detailed eye screenings. Thirty participants were found to suffer from refractive errors such as nearsightedness, farsightedness, astigmatism, and presbyopia. Thirty-three veterans were prescribed eye glasses which were distributed to them for free by the Meghriyan Institute. Other eye conditions such as infections, allergic conjunctivitis, cataract, glaucoma, diabetic angiopathy, hypertonic retinopathy and macular degeneration were diagnosed in 31 veterans. All veterans with eye diseases received free ophthalmic consultation and medical treatment prescription from the Meghriyan Institute.





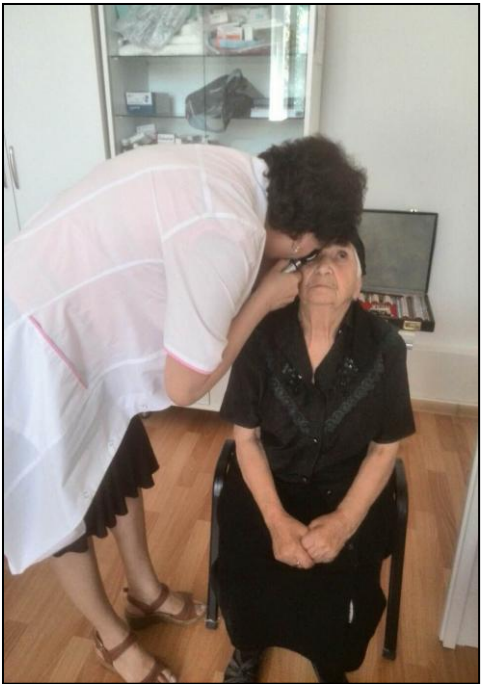
3. Meghrigian Institute Completed Eye Screenings among Adult Population in Martuni Province of Artsakh

In July, 2015, AUA's Garo Meghrigian Institute for Preventive Ophthalmology completed a project aimed at reducing the incidence of avoidable blindness and visual impairment among socio-economically disadvantaged population in Martuni provinces of Artsakh. The project targeted population living in Martuni town and Tchartar, Karmir shuka, Berdashen and Gishi villages. Overall, 280 patients received ophthalmic examination in the scope of the project. Patients diagnosed with eye pathologies received free ophthalmic consultation about their diagnosis and further treatment, and those with refractive errors or presbyopia received eye glasses from the Meghrigian Institute.

Close to 260 eye glasses were distributed to the screened population, some of whom received two eyeglasses to correct both nearsightedness and farsightedness.

The most frequently diagnosed eye disorder among participants was cataract (29.0%). About 5.0% of participants had glaucoma, while 2.5%, 1.4% and 1.1% of participants had macular degeneration, diabetic retinopathy, and hypertonic retinopathy, respectively. The prevalence of moderate and severe visual impairment was 5.4% and 0.7%, respectively, in the better eye with best possible correction. Almost 2.5% (7) of patients were blind. The rest of the sample had normal or near normal vision. A total of 79.6% (222) of patients were diagnosed with different types of refractive errors (nearsightedness, farsightedness and astigmatism) or presbyopia.

To date, Meghriyan Institute provided services to over 500 people living in Kashatagh, Shahumyan and Hadrut provinces of Artsakh. The Institute plans to expand the eye screenings to other provinces of Artsakh such as Askeran, Martakert and Shushi in the coming years.





4. Meghriyan Institute donated medical equipment to regional hospitals in Artsakh

In September, 2015, the Meghriyan Institute conducted a rapid needs assessment of medical devices and equipments in regional hospitals of Artsakh. According to the results of the assessment, the Meghriyan Institute donated medical equipment that the Center for Health Services Research and Development had to the regional hospitals in Kashatagh, Hadrut, and Martuni as part of the project in Artsakh. The Martuni regional hospital received a microscope, a centrifuge and glucometers, the Hadrut regional hospital received a spirometer, a gynecological examining table, vaginal speculums (gynecological tool for cervix examination), therapeutic booth and glycometers, and the Kashatagh regional hospital received an ECG and analyzer devices, glycometers.



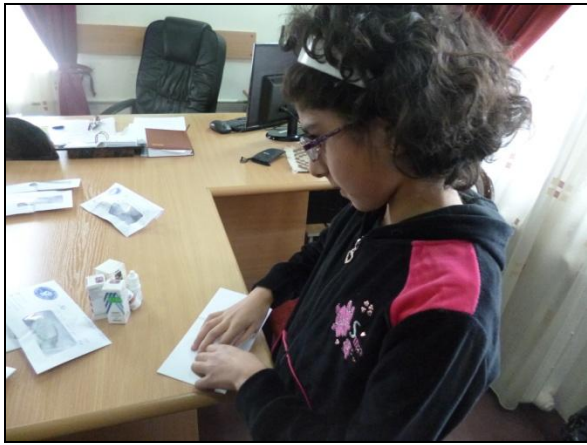
5. Celebration of World Sight Day (WSD) 2015

Meghrigian Institute organized eye screening among children living in Gavar Children's Home

On October 8, 2015, Meghrigian Institute celebrated World Sight Day (WSD) by organizing free eye screenings for the children living in Gavar Children's Home orphanage. The screenings were done within the framework of this year's WSD international theme of "Universal Eye Health" and "Eye Care for All." World Sight Day is an annual day of awareness held on the second Thursday of October to focus global attention on blindness and vision impairment.

The staff of the Meghrigian Institute visited Gavar Children's Home, which currently serves 64 school-age children. Fifty five children participated in detailed eye screenings. Out of them, 10 children were found to suffer from different types of refractive errors such as nearsightedness, farsightedness, and astigmatism. The children in need received free eyeglasses from the Meghrigian Institute. Sixteen children were diagnosed with different eye pathologies including infections, allergic conjunctivitis, amblyopia, blepharitis and aniridia. Children diagnosed with aniridia received ophthalmic eye lenses and those with other eye disorders received free ophthalmic consultation and treatment from the Meghrigian Institute.

Media coverage: <http://www.mediamax.am/am/news/society/15652/>



6. Meghriyan Public Health Ophthalmology Fellowship

Since 2004, the Meghriyan Institute has been sponsoring a fellowship program to encourage Armenian ophthalmologists to combine population-based prevention activities with clinical ophthalmology, as part of the Master of Public Health program at AUA. This fellowship prepares ophthalmologists for blindness prevention activities in Armenia. Meghriyan Fellows complete the two-year MPH Program at the American University of Armenia while engaging in practical training and research at the Garo Meghriyan Institute for Preventive Ophthalmology. The program complements clinical ophthalmology training, which is focused on providing relief to one patient, exposing the fellows to principles of public health ophthalmology and focusing on a population-based perspective of eye health.

a. Meghrigian Institute supervised Meghrigian Fellow’s thesis grant proposal on the topic of “Assessment of self-reported prevalence and risk factors of Dry Eye Disease among visual display terminal users at workplaces in Armenia”



In 2014/2015 Meri Mkhitarian became the Meghrigian Fellow, which covered the tuition fee of the student. During her studies in the MPH program, the Meghrigian Fellow worked in the Meghrigian Institute and maintained good academic standing. She completed her Public Health internship in the Meghrigian Institute. The research team of the Meghrigian Institute supervised Meghrigian Fellow’s thesis project described below.

Introduction

Dry Eye Disease (DED) is an important public health issue in developed countries due to advanced information technology and aging population. DED is a chronic eye disorder that is highly prevalent in many countries. The Definition and Classification Subcommittee of International Dry Eye Workshop (DEWS) defines: “Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface”. To date, no studies were conducted to estimate the prevalence and risk factors of DED at workplaces among visual display terminal (VDT) users in Armenia. The aim of the proposed study is to determine the prevalence and identify associated risk factors for self-reported DED among VDT users at workplaces in Armenia.

Methods

The study will be a cross-sectional survey of VDT users at workplaces in the four main communication providing companies in Armenia: Vivacell, Beeline, Orange and Ucom. The target population of the proposed research will include 1,026 adult people working with VDT at workplaces. The study population will include participants working with VDTs and knowing Armenian or English. The selection of individuals will be done by proportional simple random sampling. The number of individuals sampled from each company will be proportional to the

number of employees in comparison with other communication companies. The student investigator developed a structured questionnaire, which includes 26 close-ended questions about socio-demographic characteristics, dry eye symptoms, and risk factors of DED.

Conclusion

Investigation of the prevalence of dry eye disease and associated risk factors among office workers using VDTs at workplace will generate findings which will contribute to the prevention of DED and improvement of work productivity of the office workers.

7. Garo Meghriyan Institute for Preventive Ophthalmology Research

Publications

Beyond its fieldwork, the Garo Meghriyan Institute for Preventive Ophthalmology conducts original research to better understand eye problems and associated risk factors in Armenia, which help improve the conditions of patients in Armenia and around the world. In 2015, the Meghriyan Institute published two research articles in international peer-reviewed scientific journals. The authors of both articles are Aida Giloyan, MPH, Tsovinar Harutyunyan, MPH, PhD, and Varduhi Petrosyan, MS, PhD.

The first article, “Visual impairment and depression among socially vulnerable older adults in Armenia” was published in the *Journal of Aging & Mental Health* in February 2015. The link between visual impairment and depression is important, because depression in older adults is widespread but largely under-recognized and under-treated medical condition. The study found that having visual impairment, living in a retirement home, and having at least one non-communicable disease were independent predictors of depression among socially vulnerable older adults in Yerevan. The survey and eye screenings were carried out among 339 participants who were the residents of retirement homes and single older adults in the households registered with the Center for Social Services for Single Elderly and Disabled People in Yerevan. The prevalence of visual impairment was 13.3% in the study sample. Almost 4.0% of the study participants were blind. The rate of visual impairment among the residents of retirement homes was substantially higher than the rate among those who lived in households. The study concluded that timely screenings for eye problems in vulnerable population groups could facilitate early detection of visual impairment and help prevent vision loss and its associated

mental health problems in Armenia and other low and middle-income countries. The reference to the article is: Giloyan, A., Harutyunyan T., Petrosyan V. Visual impairment and depression among socially vulnerable older adults in Armenia. *Aging & Mental Health* 2015 Feb;19(2):175-81. doi: 10.1080/13607863.2014.920298. The article is available at the following link: <http://www.tandfonline.com/doi/abs/10.1080/13607863.2014.920298?journalCode=camh20#.VsHmnPI95D8> .

The second research article, “The Prevalence of and Major Risk Factors Associated with Diabetic Retinopathy in Gegharkunik Province of Armenia: A Cross-Sectional Study” was published in *BMC Ophthalmology* in April 2015. Diabetic retinopathy (DR) is one of the leading causes of blindness in adults of working age in industrialized countries and it is becoming one of the most significant causes of blindness in low and middle-income countries. More than 2.5 million people worldwide are affected by DR. The survey and eye screenings were carried out among 625 diabetic patients from urban and rural areas of Gegharkunik province. The prevalence of DR was 36.2% in the study sample. Age, diabetes duration, and undergoing insulin treatment were found to be independent factors associated with DR among diabetic patients. An early diagnosis of diabetes and DR can help control some of the risk factors and prevent further complications, including vision loss. Educational programs on diabetes and diabetic retinopathy can improve diabetes self-management, and continuous medical education on diabetes management for providers can improve diabetes care, leading to prevention of complications and vision loss. The reference to the article is:

Giloyan A, Harutyunyan T, and Petrosyan V. The prevalence of and major risk factors associated with diabetic retinopathy in Gegharkunik province of Armenia: a cross-sectional study. BMC Ophthalmology 2015 Apr 30, 15:46 doi:10.1186/s12886-015-0032-0 . The article is available at the following link: <http://www.biomedcentral.com/1471-2415/15/46>

Meghrigian Institute currently is working on the paper “Visual outcome and vision related quality of life among patients after cataract surgery at Sevan Regional Ophthalmic Unit (ROU) in Armenia”. This study examines the association between different levels of visual outcome

(good, borderline and poor) and vision related quality of life among patients after cataract surgery at Sevan ROU, Gegharkunik marz of Armenia.

Meghriyan Institute is also working on the paper “Visual impairment and vision related quality of life among adult population living in Hadrut and Martuni regions of Artsakh”. The primary aim of this study is to determine the association between different levels of visual impairment and overall vision related quality of life and its different domains, while controlling for other explanatory factors, in the adult population of Hadrut and Martuni region of Artsakh. The secondary aim of this study is to assess the independent contribution of specific eye diseases to vision related quality of life.

Both papers will be submitted to peer-reviewed international journals for publication in 2016.

8. Presentation at the European Public Health Conference 2015

The research team of the Meghriyan Institute presented the work “Risk Factors for Developing Myopia among Schoolchildren in Yerevan and Gegharkunik province” to the European Public Health Conference in Milan, Italy held in October 2015. The abstract was published in the European Journal of Public Health 2015.

Giloyan A, Harutyunyan T, Petrosyan V. Risk Factors for Developing Myopia among Schoolchildren in Yerevan and Gegharkunik province. European Journal of Public Health (2015) 25 (suppl 3): First published online: 6 October 2015, page 457

Giloyan A, Harutyunyan T, Petrosyan V. Risk Factors for Developing Myopia among Schoolchildren in Yerevan and Gegharkunik province. 8th European Public Health Conference. Milan, Italy, October 14-17, 2015. [poster]

9. 2015 in numbers

The Meghriyan Institute continued its partnership with the Lions Regional Ophthalmic Unit in Sevan, established earlier through the joint efforts of the Meghriyan Institute and the Ararat Lions Club (ALC), and funded by the Lions Club International Foundation-LCIF. Since its

establishment, this Unit has served around 28,094 people and performed 3,197 surgeries. Meghriyan Institute is responsible for preparing annual reports to LCIF headquarters. Meghriyan Institute provided eye screenings to 409 patients in Armenia and Artsakh, and distributed 308 free eye glasses to the population in need in 2015.